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PANDA

Permanent network to strengthen expertise on infectious diseases of aquaculture species and scientific advice to EU policy

Coordination Action

Scientific support to policies

Work Package 2 Risk analysis of exotic, emerging and re-emerging disease hazards

Annex 6: Assessments

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Annex 6 - Assessments of listed hazards Pathways of introduction, establishment, consequences and risk mitigation

6.1 Fish

6.1.1 Assessment of listed fish bacterial diseases

i) Lactococcus garviae

Pathways of introduction for Lactococcus garviae	Assessment	Uncertainty
to the EU		
Is there trade in live host species (legal or illegal) into	no	reasonably
the EU from a known positive country?		uncertain
Is there trade in products of the host species (legal or	yes	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	yes	reasonably certain
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	very uncertain
gametes of the host species?		

Establishment of Lactococcus garviae in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	very similar	very certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	one to three	very certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	days	reasonably
without a host?		uncertain
How likely is the reproductive strategy of the pathogen	not likely	reasonably
and duration of life cycle to aid establishment?		uncertain
How rapidly is the pathogen liable to spread in the EU	rapidly	reasonably certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	reasonably certain
by human assistance?		
How often has the pathogen successfully established	often	very certain
new areas outside its original range?		

Consequences of Lactococcus garviae introduction	Assessment	Uncertainty
to the EU		
Can the pathogen cause environmental harm where it	yes	reasonably certain
occurs?		
How important are social and cultural harm caused by	little or no	reasonably certain
the pathogen within its existing geographic range?	importance	
How important is economic loss to cultivated fish	very important	reasonably certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	extensive	reasonably

damage from the pathogen?		uncertain
How likely is the presence of the pathogen in the EU	not likely	reasonably
to affect export markets?		uncertain
How important would other costs resulting from	little or no	reasonably certain
introduction be?	importance	
How likely are possible control/eradication measures	not likely	reasonably
to disrupt existing biological systems?		uncertain

Risk mitigation of Lactococcus garviae in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures	very likely	very certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	reasonably certain
from the EU?		
Is there an active surveillance system for the pathogen	no	reasonably certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	no	very certain

ii) Streptococcus agalactiae

Pathways of introduction for Streptococcus agalactiae	Assessment	Uncertainty
to the EU		
Is there trade in live host species (legal or illegal) into the	yes	reasonably certain
EU from a known positive country?		
Is there trade in products of the host species (legal or	yes	very uncertain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in the	no	reasonably certain
products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Streptococcus agalactiae in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would affect	very similar	very certain
pathogen establishment in the EU compared to the area of		
current distribution?		
How many different host species are present in the EU?	one to three	very certain
How extensive (density) are the host fish/shellfish in the	rare	very certain
EU?		
Are the host species farmed and/or wild?	farmed and	very certain
	wild	
How long will the pathogen live in the environment	months	reasonably certain
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	reasonably certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU by	slowly	reasonably certain
natural means?		
How rapidly is the pathogen liable to spread in the EU by	very rapidly	reasonably certain
human assistance?		
How often has the pathogen successfully established new	often	reasonably certain
areas outside its original range?		

Consequences of Streptococcus agalactiae introduction	Assessment	Uncertainty
to the EU		
Can the pathogen cause environmental harm where it	yes	reasonably certain
occurs?		
How important are social and cultural harm caused by the	little or no	reasonably certain
pathogen within its existing geographic range?	importance	
How important is economic loss to cultivated fish caused	little or no	reasonably certain
by the pathogen within its existing geographic range?	importance	
How extensive is a region of the EU likely to suffer	limited	reasonably certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU to	not likely	reasonably certain
affect export markets?		
How important would other costs resulting from	little or no	reasonably certain
introduction be?	importance	
How likely are possible control/eradication measures to	not likely	reasonably certain

disrupt existing biological systems?		
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Risk mitigation of Streptococcus agalactiae in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures (in	not likely	reasonably certain
cultured/farmed populations) to prevent establishment of		
the pathogen?		
How likely is it that the pathogen could be eradicated from	not likely	very certain
the EU?		
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active surveillance	N/A	N/A
system?		
Is there a suitable diagnostic test available?	no	reasonably certain

iii) Streptococcus iniae

Pathways of introduction for Streptococcus iniae to the	Assessment	Uncertainty
EU		
Is there trade in live host species (legal or illegal) into the	no	reasonably certain
EU from a known positive country?		
Is there trade in products of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in the	yes	reasonably
products of the susceptible species?		uncertain
Is there trade in gametes of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably
gametes of the host species?		uncertain

Establishment of Streptococcus iniae in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would affect	very similar	very certain
pathogen establishment in the EU compared to the area of		
current distribution?		
How many different host species are present in the EU?	one to three	very certain
How extensive (density) are the host fish/shellfish in the	very	very certain
EU?	widespread	
Are the host species farmed and/or wild?	farmed and	very certain
	wild	
How long will the pathogen live in the environment	months	reasonably certain
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	reasonably certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU by	moderate	reasonably certain
natural means?		
How rapidly is the pathogen liable to spread in the EU by	very rapidly	reasonably certain
human assistance?		
How often has the pathogen successfully established new	often	reasonably certain
areas outside its original range?		

Consequences of Streptococcus iniae introduction to	Assessment	Uncertainty
the EU		
Can the pathogen cause environmental harm where it	yes	reasonably certain
occurs?		
How important are social and cultural harm caused by the	very	reasonably certain
pathogen within its existing geographic range?	important	
How important is economic loss to cultivated fish caused	very	very certain
by the pathogen within its existing geographic range?	important	
How extensive is a region of the EU likely to suffer	very extensive	reasonably certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU to	very likely	reasonably certain
affect export markets?		
How important would other costs resulting from	very	reasonably certain
introduction be?	important	
How likely are possible control/eradication measures to	very likely	reasonably certain

disrupt existing biological systems?		
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Risk mitigation of Streptococcus iniae in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures (in	not likely	very certain
cultured/farmed populations) to prevent establishment of		
the pathogen?		
How likely is it that the pathogen could be eradicated from	not likely	very certain
the EU?		
Is there an active surveillance system for the pathogen	no	reasonably certain
within the EU?		
In how many EU countries is there an active surveillance	N/A	N/A
system?		
Is there a suitable diagnostic test available?	no	reasonably certain

6.1.2 Assessment of listed fish parasitic diseasesi) Ceratomyxa shasta

Pathways of introduction for Ceratomyxa shasta to	Assessment	Uncertainty
the EU		
Is there trade in live host species (legal or illegal) into	no	reasonably
the EU from a known positive country?		uncertain
Is there trade in products of the host species (legal or	yes	very certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably
the products of the susceptible species?		uncertain
Is there trade in gametes of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	no	no data
gametes of the host species?		

Establishment of Ceratomyxa shasta in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	very similar	very certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	one to three	reasonably certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	months	very uncertain
without a host?		
How likely is the reproductive strategy of the pathogen	likely	reasonably certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	moderate	reasonably certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	reasonably certain
by human assistance?		
How often has the pathogen successfully established	never	reasonably
new areas outside its original range?		uncertain

Consequences of Ceratomyxa shasta introduction to	Assessment	Uncertainty
the EU		
Can the pathogen cause environmental harm where it	yes	reasonably certain
occurs?		
How important are social and cultural harm caused by	very important	reasonably certain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	important	reasonably certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	limited	no data
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	likely	reasonably
to affect export markets?		uncertain
How important would other costs resulting from	important	reasonably certain

introduction be?		
How likely are possible control/eradication measures	likely	reasonably certain
to disrupt existing biological systems?		

Risk mitigation of Ceratomyxa shasta in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures	not likely	reasonably certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	reasonably
from the EU?		uncertain
Is there an active surveillance system for the pathogen	no	reasonably certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	no	reasonably certain

ii) Gyrodactylus salaris

Pathways of introduction for Gyrodactylus salaris	Assessment	Uncertainty
to the EU		
Is there trade in live host species (legal or illegal) into	yes	reasonably certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	yes	very certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably certain
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	yes	very certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably certain
gametes of the host species?		

Establishment of Gyrodactylus salaris in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	very similar	very certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	more than three	very certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	hours	very certain
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	very certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	rapidly	reasonably certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	very certain
by human assistance?		
How often has the pathogen successfully established	often	very certain
new areas outside its original range?		

Consequences of Gyrodactylus salaris introduction	Assessment	Uncertainty
to the EU		
Can the pathogen cause environmental harm where it	yes	very certain
occurs?		
How important are social and cultural harm caused by	very important	very certain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	very important	very certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	very extensive	very certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	very likely	reasonably certain
to affect export markets?		
How important would other costs resulting from	very important	very certain
introduction be?		

How likely are possible control/eradication measures	very likely	very certain
to disrupt existing biological systems?		

Risk mitigation of Gyrodactylus salaris in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures	not likely	very certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	very certain
from the EU?		
Is there an active surveillance system for the pathogen	yes	very certain
within the EU?		-
In how many EU countries is there an active	<50% of	very certain
surveillance system?	countries	-
Is there a suitable diagnostic test available?	yes	very certain

${\bf iii)}\ Ne oparamo eba\ pemaquidensis$

Pathways of introduction for Neoparamoeba pemaquidensis to the EU	Assessment	Uncertainty
Is there trade in live host species (legal or illegal) into	no	reasonably
the EU from a known positive country?		uncertain
Is there trade in products of the host species (legal or	yes	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	no	reasonably
the products of the susceptible species?		uncertain
Is there trade in gametes of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	no	reasonably
gametes of the host species?		uncertain

Establishment of Neoparamoeba pemaquidensis in	Assessment	Uncertainty
the EU		
How similar are the climatic conditions that would	similar	reasonably
affect pathogen establishment in the EU compared to		uncertain
the area of current distribution?		
How many different host species are present in the	one to three	reasonably
EU?		uncertain
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	months	reasonably
without a host?		uncertain
How likely is the reproductive strategy of the pathogen	very likely	very certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	rapidly	reasonably
by natural means?		uncertain
How rapidly is the pathogen liable to spread in the EU	very rapidly	reasonably
by human assistance?		uncertain
How often has the pathogen successfully established	never	reasonably
new areas outside its original range?		uncertain

Consequences of Neoparamoeba pemaquidensis	Assessment	Uncertainty
introduction to the EU		
Can the pathogen cause environmental harm where it	yes	very certain
occurs?		
How important are social and cultural harm caused by	very important	very certain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	very important	very certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	extensive	reasonably
damage from the pathogen?		uncertain
How likely is the presence of the pathogen in the EU	likely	reasonably
to affect export markets?		uncertain
How important would other costs resulting from	important	reasonably

introduction be?		uncertain
How likely are possible control/eradication measures	not likely	reasonably certain
to disrupt existing biological systems?		

Risk mitigation of Neoparamoeba pemaquidensis in	Assessment	Uncertainty
the EU		
How likely are existing control or husbandry measures	very likely	reasonably
(in cultured/farmed populations) to prevent		uncertain
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	very certain
from the EU?		
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	no	reasonably certain

$iv)\ Parvica psula\ pseudobranchi cola$

Pathways of introduction for Parvicapsula	Assessment	Uncertainty
pseudobranchicola to the EU		
Is there trade in live host species (legal or illegal) into	yes	very certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	yes	very certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	no data
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	yes	very certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably certain
gametes of the host species?		

Establishment of <i>Parvicapsula pseudobranchicola</i> in	Assessment	Uncertainty
the EU		
How similar are the climatic conditions that would	very similar	very certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	one	very certain
EU?		
How extensive (density) are the host fish/shellfish in	fairly widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	days	no data
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	reasonably certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	slowly	reasonably
by natural means?		uncertain
How rapidly is the pathogen liable to spread in the EU	very slowly	reasonably
by human assistance?		uncertain
How often has the pathogen successfully established	occasionally	no data
new areas outside its original range?		

Consequences of Parvicapsula pseudobranchicola	Assessment	Uncertainty
introduction to the EU		
Can the pathogen cause environmental harm where it	no	no data
occurs?		
How important are social and cultural harm caused by	little or no	no data
the pathogen within its existing geographic range?	importance	
How important is economic loss to cultivated fish	important	reasonably certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	extensive	reasonably
damage from the pathogen?		uncertain
How likely is the presence of the pathogen in the EU	not likely	reasonably certain
to affect export markets?		
How important would other costs resulting from	important	reasonably certain

introduction be?		
How likely are possible control/eradication measures	not likely	reasonably certain
to disrupt existing biological systems?		

Risk mitigation of Parvicapsula pseudobranchicola	Assessment	Uncertainty
in the EU		
How likely are existing control or husbandry measures	not likely	very certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	very certain
from the EU?		
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	yes	reasonably
		uncertain

v) Trypanoplasma (Cryptobia) salmositica

Pathways of introduction for Trypanoplasma	Assessment	Uncertainty
(Cryptobia) salmositica to the EU		
Is there trade in live host species (legal or illegal) into	no	reasonably certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	yes	very certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably
the products of the susceptible species?		uncertain
Is there trade in gametes of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	no	reasonably
gametes of the host species?		uncertain

Establishment of Trypanoplasma (Cryptobia)	Assessment	Uncertainty
salmositica in the EU		
How similar are the climatic conditions that would	similar	reasonably certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	more than three	very certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	hours	reasonably certain
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	reasonably
and duration of life cycle to aid establishment?		uncertain
How rapidly is the pathogen liable to spread in the EU	moderate	reasonably
by natural means?		uncertain
How rapidly is the pathogen liable to spread in the EU	very rapidly	reasonably certain
by human assistance?		
How often has the pathogen successfully established	occasionally	reasonably certain
new areas outside its original range?		

Consequences of Trypanoplasma (Cryptobia)	Assessment	Uncertainty
salmositica introduction to the EU		
Can the pathogen cause environmental harm where it	yes	reasonably certain
occurs?		
How important are social and cultural harm caused by	very important	reasonably certain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	very important	very certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	very extensive	reasonably
damage from the pathogen?		uncertain
How likely is the presence of the pathogen in the EU	very likely	reasonably
to affect export markets?		uncertain
How important would other costs resulting from	very important	reasonably

introduction be?		uncertain
How likely are possible control/eradication measures	not likely	reasonably
to disrupt existing biological systems?		uncertain

Risk mitigation of Trypanoplasma (Cryptobia)	Assessment	Uncertainty
salmositica in the EU		
How likely are existing control or husbandry measures	not likely	reasonably
(in cultured/farmed populations) to prevent		uncertain
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	reasonably
from the EU?		uncertain
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	no	very certain

6.1.3 Assessment of listed fish viral diseases

i) Epizootic haematopoietic necrosis

Pathways of introduction for Epizootic	Assessment	Uncertainty
haematopoietic necrosis virus to the EU		
Is there trade in live host species (legal or illegal) into	no	reasonably certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	no	reasonably
the products of the susceptible species?		uncertain
Is there trade in gametes of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably certain
gametes of the host species?		

Establishment of Epizootic haematopoietic necrosis	Assessment	Uncertainty
virus in the EU		
How similar are the climatic conditions that would	very similar	reasonably certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	more than three	very certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	months	reasonably certain
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	reasonably certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	slowly	reasonably certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	reasonably
by human assistance?		uncertain
How often has the pathogen successfully established	never	reasonably
new areas outside its original range?		uncertain

Consequences of Epizootic haematopoietic necrosis	Assessment	Uncertainty
virus introduction to the EU		
Can the pathogen cause environmental harm where it	yes	reasonably certain
occurs?		
How important are social and cultural harm caused by	little or no	reasonably certain
the pathogen within its existing geographic range?	importance	
How important is economic loss to cultivated fish	little or no	reasonably certain
caused by the pathogen within its existing geographic	importance	
range?		
How extensive is a region of the EU likely to suffer	very extensive	reasonably certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	very likely	reasonably certain
to affect export markets?		

How important would other costs resulting from	very important	reasonably certain
introduction be?		-
How likely are possible control/eradication measures	very likely	reasonably certain
to disrupt existing biological systems?		

Risk mitigation of Epizootic haematopoietic necrosis virus in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures (in cultured/farmed populations) to prevent establishment of the pathogen?	not likely	reasonably uncertain
How likely is it that the pathogen could be eradicated from the EU?	not likely	reasonably uncertain
Is there an active surveillance system for the pathogen within the EU?	no	reasonably certain
In how many EU countries is there an active surveillance system?	N/A	N/A
Is there a suitable diagnostic test available?	yes	very certain

ii) Infectious salmon anaemia

Pathways of introduction for infectious salmon	Assessment	Uncertainty
anaemia virus to the EU		
Is there trade in live host species (legal or illegal) into	no	reasonably certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	yes	very certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably certain
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably certain
gametes of the host species?		

Establishment of infectious salmon anaemia virus	Assessment	Uncertainty
in the EU		
How similar are the climatic conditions that would	very similar	very certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	more than three	reasonably certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	reasonably certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	months	reasonably certain
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	reasonably certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	slowly	reasonably certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	very certain
by human assistance?		
How often has the pathogen successfully established	often	reasonably certain
new areas outside its original range?		

Consequences of infectious salmon anaemia virus	Assessment	Uncertainty
introduction to the EU		
Can the pathogen cause environmental harm where it	no	reasonably certain
occurs?		
How important are social and cultural harm caused by	very important	very certain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	very important	very certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	very extensive	reasonably certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	very likely	reasonably certain
to affect export markets?	-	-
How important would other costs resulting from	very important	very certain

introduction be?		
How likely are possible control/eradication measures	not likely	reasonably certain
to disrupt existing biological systems?		

Risk mitigation of infectious salmon anaemia virus	Assessment	Uncertainty
in the EU		
How likely are existing control or husbandry measures	very likely	reasonable certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	reasonable certain
from the EU?		
Is there an active surveillance system for the pathogen	yes	very certain
within the EU?		
In how many EU countries is there an active	>50% of	very certain
surveillance system?	countries	
Is there a suitable diagnostic test available?	yes	reasonably certain

iii) Koi herpes virus

Pathways of introduction for Koi herpes virus to	Assessment	Uncertainty
the EU		
Is there trade in live host species (legal or illegal) into	yes	very certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	no	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	N/A	N/A
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Koi herpes virus in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	very similar	reasonably certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	one	reasonably certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	days	reasonably
without a host?		uncertain
How likely is the reproductive strategy of the pathogen	very likely	reasonably certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	rapidly	reasonably certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	very certain
by human assistance?		
How often has the pathogen successfully established	often	very certain
new areas outside its original range?		

Consequences of Koi herpes virus introduction to	Assessment	Uncertainty
the EU		
Can the pathogen cause environmental harm where it	yes	reasonably certain
occurs?		
How important are social and cultural harm caused by	very important	reasonably certain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	very important	reasonably certain
caused by the pathogen within its existing geographic		to very certain
range?		
How extensive is a region of the EU likely to suffer	very extensive	reasonably certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	not likely	reasonably certain
to affect export markets?		
How important would other costs resulting from	very important	reasonably certain
introduction be?		

How likely are possible control/eradication measures	not likely	reasonably certain
to disrupt existing biological systems?		

Risk mitigation of Koi herpes virus in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures	not likely	reasonably certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	reasonably certain
from the EU?		
Is there an active surveillance system for the pathogen	no	reasonably certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	yes	reasonably certain

iv) Red sea bream iridovirus

Pathways of introduction for Red sea bream	Assessment	Uncertainty
iridovirus to the EU		
Is there trade in live host species (legal or illegal) into	yes	reasonably
the EU from a known positive country?		uncertain
Is there trade in products of the host species (legal or	yes	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	no	very certain
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Red sea bream iridovirus in the	Assessment	Uncertainty
EU		
How similar are the climatic conditions that would	similar	reasonably
affect pathogen establishment in the EU compared to		uncertain
the area of current distribution?		
How many different host species are present in the	more than three	reasonably certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	reasonably
the EU?		uncertain
Are the host species farmed and/or wild?	farmed and wild	reasonably certain
How long will the pathogen live in the environment	months	very uncertain
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	very uncertain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	rapidly	very uncertain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	very uncertain
by human assistance?		
How often has the pathogen successfully established	often	reasonably
new areas outside its original range?		uncertain

Consequences of Red sea bream iridovirus	Assessment	Uncertainty
introduction to the EU		
Can the pathogen cause environmental harm where it	yes	reasonably
occurs?		uncertain
How important are social and cultural harm caused by	very important	very uncertain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	very important	reasonably
caused by the pathogen within its existing geographic		uncertain
range?		
How extensive is a region of the EU likely to suffer	very extensive	reasonably certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	not likely	reasonably
to affect export markets?		uncertain
How important would other costs resulting from	very important	reasonably certain

introduction be?		
How likely are possible control/eradication measures	not likely	reasonable
to disrupt existing biological systems?		uncertain

Risk mitigation of Red sea bream iridovirus in the	Assessment	Uncertainty
EU		
How likely are existing control or husbandry measures	not likely	reasonably certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	reasonably
from the EU?		uncertain
Is there an active surveillance system for the pathogen	no	reasonably certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	no	very certain

6.1.4 Assessment of listed fish fungal diseasesi) Aphanomyces invadans

Pathways of introduction for Aphanomyces	Assessment	Uncertainty
invadans to the EU		
Is there trade in live host species (legal or illegal) into	yes	reasonably
the EU from a known positive country?		uncertain
Is there trade in products of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably certain
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Aphanomyces invadans in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	not similar	reasonably certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	more than three	very certain
EU?		
How extensive (density) are the host fish/shellfish in	fairly widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	months	reasonably certain
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	very certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	rapidly	reasonably certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	reasonably certain
by human assistance?		
How often has the pathogen successfully established	often	very certain
new areas outside its original range?		

Consequences of Aphanomyces invadans	Assessment	Uncertainty
introduction to the EU		
Can the pathogen cause environmental harm where it	yes	very certain
occurs?		
How important are social and cultural harm caused by	very important	very certain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	very important	very certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	limited	reasonably certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	not likely	reasonably certain
to affect export markets?		
How important would other costs resulting from	important	reasonably certain

introduction be?		
How likely are possible control/eradication measures	very likely	very certain
to disrupt existing biological systems?		

Risk mitigation of Aphanomyces invadans in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures	not likely	very certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	very certain
from the EU?		
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	yes	very certain

6.2 Shellfish

6.2.1 Assessment of listed shellfish bacterial diseases

i) Candidatus Xenohaliotis californiensis

Pathways of introduction for Candidatus	Assessment	Uncertainty
Xenohaliotis californiensis to the EU		
Is there trade in live host species (legal or illegal) into	yes	reasonably certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	no	no data
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	N/A	N/A
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Candidatus Xenohaliotis	Assessment	Uncertainty
californiensis in the EU		
How similar are the climatic conditions that would	not similar	reasonably certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	one to three	reasonably certain
EU?		
How extensive (density) are the host fish/shellfish in	fairly widespread	reasonably certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	days	no data
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	reasonably certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	rapidly	reasonably certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	reasonably certain
by human assistance?		
How often has the pathogen successfully established	occasionally	very uncertain
new areas outside its original range?		

Consequences of Candidatus Xenohaliotis	Assessment	Uncertainty
californiensis introduction to the EU		
Can the pathogen cause environmental harm where it	yes	reasonably certain
occurs?		
How important are social and cultural harm caused by	important	reasonably
the pathogen within its existing geographic range?		uncertain
How important is economic loss to cultivated fish	important	reasonably certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	extensive	very uncertain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	likely	very uncertain

to affect export markets?		
How important would other costs resulting from	important	very uncertain
introduction be?		
How likely are possible control/eradication measures	not likely	reasonably
to disrupt existing biological systems?		uncertain

Risk mitigation of Candidatus Xenohaliotis	Assessment	Uncertainty
californiensis in the EU		
How likely are existing control or husbandry measures	likely	reasonably
(in cultured/farmed populations) to prevent		uncertain
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	reasonably certain
from the EU?		
Is there an active surveillance system for the pathogen	no	reasonably certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	yes	very certain

ii) Nocardia Crassostrea

Pathways of introduction for Nocardia crassostrea	Assessment	Uncertainty
to the EU		
Is there trade in live host species (legal or illegal) into	no	very uncertain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	N/A	N/A
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Nocardia crassostrea in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	similar	reasonably certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	one to three	very certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	months	no data
without a host?		
How likely is the reproductive strategy of the pathogen	likely	no data
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	slowly	no data
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	very uncertain
by human assistance?		
How often has the pathogen successfully established	often	reasonably
new areas outside its original range?		uncertain

Consequences of Nocardia crassostrea introduction	Assessment	Uncertainty
to the EU		
Can the pathogen cause environmental harm where it	no	reasonably
occurs?		uncertain
How important are social and cultural harm caused by	important	very uncertain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	important	very certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	very extensive	no data
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	very likely	no data
to affect export markets?		
How important would other costs resulting from	very important	no data
introduction be?		

How likely are possible control/eradication measures	not likely	very certain
to disrupt existing biological systems?		

Risk mitigation of <i>Nocardia crassostrea</i> in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures	likely	very certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	very certain
from the EU?	-	
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	yes	very certain

6.2.2 Assessment of listed shellfish parasitic diseases i) Marteilioides spp. (M. chungmuensis)

Pathways of introduction for Marteilioides	Assessment	Uncertainty
chungmuensis to the EU		
Is there trade in live host species (legal or illegal) into	no	very uncertain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	N/A	N/A
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of <i>Marteilioides chungmuensis</i> in the	Assessment	Uncertainty
EU		
How similar are the climatic conditions that would	not similar	reasonably
affect pathogen establishment in the EU compared to		uncertain
the area of current distribution?		
How many different host species are present in the	one to three	reasonably certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	months	no data
without a host?		
How likely is the reproductive strategy of the pathogen	not likely	no data
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	slowly	no data
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	no data
by human assistance?		
How often has the pathogen successfully established	occasionally	reasonably
new areas outside its original range?		uncertain

Consequences of Marteilioides chungmuensis	Assessment	Uncertainty
introduction to the EU		
Can the pathogen cause environmental harm where it	no	very uncertain
occurs?		
How important are social and cultural harm caused by	important	reasonably
the pathogen within its existing geographic range?		uncertain
How important is economic loss to cultivated fish	important	reasonably certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	extensive	no data
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	likely	no data
to affect export markets?		

How important would other costs resulting from introduction be?	very important	no data
How likely are possible control/eradication measures	not likely	very uncertain
to disrupt existing biological systems?		

Risk mitigation of Marteilioides chungmuensis in	Assessment	Uncertainty
the EU		
How likely are existing control or husbandry measures	likely	reasonably certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	no data
from the EU?		
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	yes	very certain

ii) Perkinsus marinus

Pathways of introduction for Perkinsus marinus to	Assessment	Uncertainty
the EU		
Is there trade in live host species (legal or illegal) into	no	very uncertain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	N/A	N/A
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of <i>Perkinsus marinus</i> in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	similar	reasonably certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	one	very certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	months	reasonably certain
without a host?		
How likely is the reproductive strategy of the pathogen	likely	reasonably
and duration of life cycle to aid establishment?		uncertain
How rapidly is the pathogen liable to spread in the EU	moderate	very uncertain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	very uncertain
by human assistance?		
How often has the pathogen successfully established	often	no data
new areas outside its original range?		

Consequences of <i>Perkinsus marinus</i> introduction to	Assessment	Uncertainty
the EU		
Can the pathogen cause environmental harm where it	yes	very certain
occurs?		
How important are social and cultural harm caused by	very important	very certain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	very important	very certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	extensive	no data
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	very likely	no data
to affect export markets?		
How important would other costs resulting from	very important	very certain
introduction be?		

How likely are possible control/eradication measures	likely	reasonably certain
to disrupt existing biological systems?		

Risk mitigation of <i>Perkinsus marinus</i> in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures	likely	reasonably
(in cultured/farmed populations) to prevent		uncertain
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	reasonably certain
from the EU?		
Is there an active surveillance system for the pathogen	yes	very certain
within the EU?		
In how many EU countries is there an active	>50% of	reasonably
surveillance system?	countries	uncertain
Is there a suitable diagnostic test available?	yes	reasonably
		uncertain

iii) Perkinsus olseni/atlanticus

Pathways of introduction for Perkinsus	Assessment	Uncertainty
olseni/atlanticus to the EU		
Is there trade in live host species (legal or illegal) into	yes	very uncertain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	no	reasonably
illegal) into the EU from a known positive country?		uncertain
Has the pathogen been spread by international trade in	N/A	N/A
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	no data
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Perkinsus olseni/atlanticus in the	Assessment	Uncertainty
EU		
How similar are the climatic conditions that would	very similar	very certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	more than three	very certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	months	reasonably certain
without a host?		
How likely is the reproductive strategy of the pathogen	not likely	reasonably
and duration of life cycle to aid establishment?		uncertain
How rapidly is the pathogen liable to spread in the EU	moderate	very uncertain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	reasonably
by human assistance?		uncertain
How often has the pathogen successfully established	often	reasonably
new areas outside its original range?		uncertain

Consequences of Perkinsus olseni/atlanticus	Assessment	Uncertainty
introduction to the EU		
Can the pathogen cause environmental harm where it	yes	reasonably certain
occurs?		
How important are social and cultural harm caused by	little or no	reasonably certain
the pathogen within its existing geographic range?	importance	
How important is economic loss to cultivated fish	very important	reasonably certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	extensive	reasonably
damage from the pathogen?		uncertain
How likely is the presence of the pathogen in the EU	not likely	reasonably certain
to affect export markets?		
How important would other costs resulting from	very important	very certain

introduction be?		
How likely are possible control/eradication measures	not likely	reasonably certain
to disrupt existing biological systems?		

Risk mitigation of Perkinsus olseni/atlanticus in the	Assessment	Uncertainty
EU		
How likely are existing control or husbandry measures	likely	reasonably
(in cultured/farmed populations) to prevent		uncertain
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	reasonably certain
from the EU?		
Is there an active surveillance system for the pathogen	yes	reasonably
within the EU?		uncertain
In how many EU countries is there an active	<50% of	reasonably
surveillance system?	countries	uncertain
	Countries	
Is there a suitable diagnostic test available?	yes	reasonably certain

6.3 Crustacean

6.3.1 Assessment of listed crustacean bacterial diseases

i) Coxiella cheraxi

Pathways of introduction for Coxiella cheraxi to the	Assessment	Uncertainty
EU		
Is there trade in live host species (legal or illegal) into	yes	reasonably certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	no data
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	no data
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Coxiella cheraxi in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	similar	very certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	one	no data
EU?		
How extensive (density) are the host fish/shellfish in	rare	no data
the EU?		
Are the host species farmed and/or wild?	farmed only	no data
How long will the pathogen live in the environment	days	no data
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	no data
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	rapidly	no data
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	no data
by human assistance?		
How often has the pathogen successfully established	occasionally	no data
new areas outside its original range?		

Consequences of Coxiella cheraxi introduction to	Assessment	Uncertainty
the EU		
Can the pathogen cause environmental harm where it	no	no data
occurs?		
How important are social and cultural harm caused by	little or no	reasonably certain
the pathogen within its existing geographic range?	importance	
How important is economic loss to cultivated fish	important	reasonably certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	limited	no data
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	not likely	very certain
to affect export markets?		

How important would other costs resulting from	little o	r no	no data
introduction be?	importance	e	
How likely are possible control/eradication measures	not likely		no data
to disrupt existing biological systems?			

Risk mitigation of Coxiella cheraxi in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures	not likely	no data
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	fairly likely	no data
from the EU?		
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	no	very certain

6.3.2 Assessment of listed crustacean viral diseases

i) IHHNV

Pathways of introduction for Infectious	Assessment	Uncertainty
hypodermal and haematopoietic necrosis virus to		
the EU		
Is there trade in live host species (legal or illegal) into	no	reasonably
the EU from a known positive country?		uncertain
Is there trade in products of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably
the products of the susceptible species?		uncertain
Is there trade in gametes of the host species (legal or	no	very certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Infectious hypodermal and	Assessment	Uncertainty
haematopoietic necrosis virus in the EU		
How similar are the climatic conditions that would	not similar	reasonably certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	one to three	reasonably
EU?		uncertain
How extensive (density) are the host fish/shellfish in	rare	reasonably certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	reasonably certain
How long will the pathogen live in the environment	days to months	very uncertain
without a host?		
How likely is the reproductive strategy of the pathogen	likely	very uncertain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	slowly to	reasonably certain
by natural means?	moderate	
How rapidly is the pathogen liable to spread in the EU	very slowly to	reasonably certain
by human assistance?	moderate	
How often has the pathogen successfully established	often	reasonably certain
new areas outside its original range?		

Consequences of Infectious hypodermal and	Assessment	Uncertainty
haematopoietic necrosis virus introduction to the		
EU		
Can the pathogen cause environmental harm where it	no	reasonably
occurs?		uncertain
How important are social and cultural harm caused by	little or no	reasonably certain
the pathogen within its existing geographic range?	importance	
How important is economic loss to cultivated fish	little or no	reasonably certain
caused by the pathogen within its existing geographic	importance to	
range?	important	
How extensive is a region of the EU likely to suffer	limited	very certain
damage from the pathogen?		

How likely is the presence of the pathogen in the EU	not likely	reasonably certain
to affect export markets?		
How important would other costs resulting from	little or no	reasonably certain
introduction be?	importance to	
	important	
How likely are possible control/eradication measures	not likely	very uncertain
to disrupt existing biological systems?		

Risk mitigation of Infectious hypodermal and	Assessment	Uncertainty
haematopoietic necrosis virus in the EU		
How likely are existing control or husbandry measures	not likely	reasonably certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	uncertain
from the EU?		
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	no	reasonably certain

ii) Taura syndrome

Pathways of introduction for Taura syndrome to	Assessment	Uncertainty
the EU		
Is there trade in live host species (legal or illegal) into	yes	reasonably certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	yes	very certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	yes	very certain
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Taura syndrome in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	very similar	very certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	one	reasonably certain
EU?		
How extensive (density) are the host fish/shellfish in	rare	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	months	reasonably
without a host?		uncertain
How likely is the reproductive strategy of the pathogen	very likely	reasonably certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	slowly	reasonably certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	reasonably certain
by human assistance?		
How often has the pathogen successfully established	often	very certain
new areas outside its original range?		

Consequences of Taura syndrome introduction to	Assessment	Uncertainty
the EU		
Can the pathogen cause environmental harm where it	no	reasonably certain
occurs?		
How important are social and cultural harm caused by	very important	very certain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	very important	very certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	very extensive	very certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	not likely	reasonably certain
to affect export markets?		
How important would other costs resulting from	little or no	reasonably certain
introduction be?	importance	

How likely are possible control/eradication measures	not likely	reasonably
to disrupt existing biological systems?		uncertain

Risk mitigation of Taura syndrome in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures	not likely	reasonably certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	reasonably certain
from the EU?		
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	yes	very certain

iii) White spot

Pathways of introduction for Whitespot to the EU	Assessment	Uncertainty
Is there trade in live host species (legal or illegal) into	yes	reasonably
the EU from a known positive country?		uncertain
Is there trade in products of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	yes	reasonably certain
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	no	very certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Whitespot in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	very similar	reasonably certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	more than three	very certain
EU?		
How extensive (density) are the host fish/shellfish in	fairly widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	reasonably certain
How long will the pathogen live in the environment	months	reasonably certain
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	reasonably
and duration of life cycle to aid establishment?		uncertain
How rapidly is the pathogen liable to spread in the EU	slowly	reasonably certain
by natural means?	-	
How rapidly is the pathogen liable to spread in the EU	very rapidly	very certain
by human assistance?		
How often has the pathogen successfully established	often	reasonably certain
new areas outside its original range?		

Consequences of Whitespot introduction to the EU	Assessment	Uncertainty
Can the pathogen cause environmental harm where it	yes	reasonably
occurs?		uncertain
How important are social and cultural harm caused by	important	reasonably certain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	very important	reasonably certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	limited	very certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	not likely	reasonably
to affect export markets?		uncertain
How important would other costs resulting from	important	reasonably
introduction be?		uncertain
How likely are possible control/eradication measures	not likely	reasonably
to disrupt existing biological systems?		uncertain

Risk mitigation of Whitespot in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures	not likely	reasonably certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	very certain
from the EU?		
Is there an active surveillance system for the pathogen	no	reasonably certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	no	very certain

iv) Yellowhead

Pathways of introduction for Yellowhead to the EU	Assessment	Uncertainty
Is there trade in live host species (legal or illegal) into	yes	reasonably certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	yes	very certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably
the products of the susceptible species?		uncertain
Is there trade in gametes of the host species (legal or	no	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	N/A	N/A
gametes of the host species?		

Establishment of Yellowhead in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	very similar	reasonably certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	one	reasonably certain
EU?		
How extensive (density) are the host fish/shellfish in	rare	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	reasonably certain
How long will the pathogen live in the environment	months	reasonably
without a host?		uncertain
How likely is the reproductive strategy of the pathogen	very likely	reasonably
and duration of life cycle to aid establishment?		uncertain
How rapidly is the pathogen liable to spread in the EU	slowly	reasonably certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	very rapidly	reasonably certain
by human assistance?		
How often has the pathogen successfully established	often	very certain
new areas outside its original range?		

Consequences of Yellowhead introduction to the	Assessment	Uncertainty
EU		
Can the pathogen cause environmental harm where it	no	reasonably
occurs?		uncertain
How important are social and cultural harm caused by	very important	reasonably
the pathogen within its existing geographic range?		uncertain
How important is economic loss to cultivated fish	very important	reasonably certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	limited	reasonably certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	not likely	reasonably certain
to affect export markets?		
How important would other costs resulting from	little or no	reasonably
introduction be?	importance	uncertain
How likely are possible control/eradication measures	not likely	reasonably certain

to disrupt existing biological systems?		
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Risk mitigation of Yellowhead in the EU	Assessment	Uncertainty
How likely are existing control or husbandry measures	not likely	very certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	very certain
from the EU?		
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	no	reasonably certain

6.4 Amphibian6.4.1 Assessment of listed amphibian viral diseases

i) Ranavirus

Pathways of introduction for Ranavirus	Assessment	Uncertainty
(Iridoviridae) to the EU		
Is there trade in live host species (legal or illegal) into	yes	reasonably certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably
the products of the susceptible species?		uncertain
Is there trade in gametes of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	reasonably
gametes of the host species?		uncertain

Establishment of Ranavirus (Iridoviridae) in the EU	Assessment	Uncertainty
How similar are the climatic conditions that would	very similar	very certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	more than three	very certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	reasonably certain
How long will the pathogen live in the environment	months	very certain
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	reasonably
and duration of life cycle to aid establishment?		uncertain
How rapidly is the pathogen liable to spread in the EU	moderate	reasonably certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	moderate	reasonably certain
by human assistance?		
How often has the pathogen successfully established	occasionally	reasonably certain
new areas outside its original range?		

Consequences of Ranavirus (Iridoviridae)	Assessment	Uncertainty
introduction to the EU		
Can the pathogen cause environmental harm where it	yes	reasonably certain
occurs?		
How important are social and cultural harm caused by	important	reasonably certain
the pathogen within its existing geographic range?		
How important is economic loss to cultivated fish	very important	reasonably certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	extensive	reasonably certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	likely	reasonably certain
to affect export markets?		

How important would other costs resulting from	important	reasonably certain
introduction be?		
How likely are possible control/eradication measures	likely	reasonably certain
to disrupt existing biological systems?		

Risk mitigation of Ranavirus (Iridoviridae) in the	Assessment	Uncertainty
EU		
How likely are existing control or husbandry measures	likely	reasonably certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	very certain
from the EU?		
Is there an active surveillance system for the pathogen	no	reasonably
within the EU?		uncertain
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	yes	very certain

6.4.2 Assessment of listed amphibian fungal diseases i) Batrachochytrium dendrobatidis

Pathways of introduction for Batrachochytrium	Assessment	Uncertainty
dendrobatidis to the EU		
Is there trade in live host species (legal or illegal) into	yes	reasonably certain
the EU from a known positive country?		
Is there trade in products of the host species (legal or	yes	reasonably certain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	no data
the products of the susceptible species?		
Is there trade in gametes of the host species (legal or	yes	very uncertain
illegal) into the EU from a known positive country?		
Has the pathogen been spread by international trade in	no	very uncertain
gametes of the host species?		

Establishment of Batrachochytrium dendrobatidis in	Assessment	Uncertainty
the EU		
How similar are the climatic conditions that would	very similar	very certain
affect pathogen establishment in the EU compared to		
the area of current distribution?		
How many different host species are present in the	more than three	very certain
EU?		
How extensive (density) are the host fish/shellfish in	very widespread	very certain
the EU?		
Are the host species farmed and/or wild?	farmed and wild	very certain
How long will the pathogen live in the environment	months	very certain
without a host?		
How likely is the reproductive strategy of the pathogen	very likely	very certain
and duration of life cycle to aid establishment?		
How rapidly is the pathogen liable to spread in the EU	moderate	very certain
by natural means?		
How rapidly is the pathogen liable to spread in the EU	moderate	very certain
by human assistance?		
How often has the pathogen successfully established	often	very certain
new areas outside its original range?		

Consequences of Batrachochytrium dendrobatidis	Assessment	Uncertainty
introduction to the EU		
Can the pathogen cause environmental harm where it	yes	very certain
occurs?		
How important are social and cultural harm caused by	important	reasonably
the pathogen within its existing geographic range?		uncertain
How important is economic loss to cultivated fish	important	reasonably certain
caused by the pathogen within its existing geographic		
range?		
How extensive is a region of the EU likely to suffer	very extensive	very certain
damage from the pathogen?		
How likely is the presence of the pathogen in the EU	likely	reasonably certain
to affect export markets?		

How important would other costs resulting from	important	reasonably certain
introduction be?		
How likely are possible control/eradication measures	not likely	very certain
to disrupt existing biological systems?		

Risk mitigation of Batrachochytrium dendrobatidis	Assessment	Uncertainty
in the EU		
How likely are existing control or husbandry measures	not likely	very certain
(in cultured/farmed populations) to prevent		
establishment of the pathogen?		
How likely is it that the pathogen could be eradicated	not likely	very certain
from the EU?		
Is there an active surveillance system for the pathogen	no	very certain
within the EU?		
In how many EU countries is there an active	N/A	N/A
surveillance system?		
Is there a suitable diagnostic test available?	no	very certain